SUBJECT INDEX

A

Acetate
  α-ketoglutarate synthesis and, 11
Acetic anhydride, 9
Acetobacter aceti ssp. *xylinum*
  bacteriohopanetetrol in, 306
Acetobacter pasteurianus
  squalene cyclization in, 319
Acetobacter xylinum
  IncP plasmids of, 78
Achromobacter parvulus
  IncP plasmids of, 78
Acinetobacter
  fatty acid oxidation by, 11
  IncP plasmids of, 78
Acinetobacter calcoaceticus
  cecropin D and, 109
Acquired immune deficiency syndrome
  See AIDS
Actinomycetes
  β-lactam antibiotics and, 62-63
  cephalosporin C and, 52
  cystathionine-γ-lyase of, 62-63
Actinomycins, 66, 264, 274, 276
Actinoxanthin, 260
Acyl carrier protein
  citrate lyase and, 10
Adenosine monophosphate
  See AMP
Adenosine nucleotides
  starving marine bacteria and, 37-38
Adenosine triphosphate
  See ATP
Adenylate kinase
  trypanosomal glycosomes and, 132, 139
Aerobacter
  endogenous metabolism of, 33
Aerobacter aerogenes
  growth of
    carbon dioxide and, 2-3
  polymyxin and, 266
  starving
    DNA synthesis and degradation in, 33-34
Aerobactin, 276
Aerobic catabolism, 15-16
Aerobic glycolysis
  trypanosomal, 135
Aeromonas
  IncP plasmids of, 78
  starvation survival of, 30
Aeruginocin AP41
  IncP plasmids and, 81
Agrobacterium
  IncP plasmids of, 78
AIDS, 691, 698
AIDS virus
  env gene of, 416
  T4 (CD4) antigen and, 422
Alamethicin, 264, 273
Alcaligenes
  IncP plasmids of, 78
  starvation survival of, 30
Alcohol
  cellular toxicity of, 6
Alkylphenol ethoxylates
  biodegradation of, 6-7
Alternarolide, 271
Amdinocillin
  minimal inhibitory concentration of, 580
Amino acids
  bacterial endogenous metabolism and, 33
D-Amino acids
  peptide antibiotics and, 270-71
Amino acid sequences
  bacterial leader peptides and, 524-25
α-Aminoadipic acid
  β-lactam antibiotics and, 52
  β-lactam biosynthesis and, 58-59
Aminopolyols, 305-6
Ammonia
  bacterial assimilation of, 246-47
Ammonium
  β-lactam synthesis and, 64-65
AMP
  excretion by starving bacteria, 36
Ampicillin
  IncP plasmids and, 81
AM-toxin, 271
Anabaena
  IncP plasmids of, 78
Anacystis nidulans
  sterols in, 302
Anaerobic glycolysis
  trypanosomal, 135-37
Anaplerotic sequence, 10-11
Ancovenin, 261
AN-peptides, 260
Antheraea pernyi
  immunity to infection in, 106
Anthrax, 159
Antibiotics
  Azotobacter mutants resistant to, 232
  β-lactam, 51-70
    biosynthesis of, 58-64
    precursors of, 52
  peptide
    biosynthesis of, 259-80
    modification reactions and, 270-75
    peptide chain derivation and, 260-70
    Pseudomonas aeruginosa and, 453
  ribosomally formed, 260-63
Antigens
  malaria, 182-96
  sporozoite, 183-86
Antrimycin, 271
Arabinogalactan-peptidoglycan complex
  Mycobacterium leprae and, 653
Archaebacteria
  polar lipids of, 310
Arginine
  starved *Vibrio* ANT 300 cells and, 42
Aromatic acids
  formation of
    lignin and, 14
Aromatic catabolism, 13-17
Aromatic monooxygenases, 15
Arthrobacter
  endogenous metabolism of, 33
Arthrobacter crystallopoietes
  starving
    AMP excretion by, 36
    enzyme activity in, 35

Ascomycetes
lignin biodegradation and, 471
Aspergillus
identification of, 218
Aspergillus fumigatus
lignin biodegradation and, 470
Assassin bug, 116
ATP, 5-6
bacterial starvation and, 36-38
ATP citrate lyase, 8
Attacins, 112-13
Autoimmune disease
RNA viruses and, 421
Azospirillum brazilense
IncP plasmids of, 78
Azotobacter
gene organization and expression in, 229-30
gene transfer systems in, 230-32
hydrogen uptake by, 249-50
IncP plasmids of, 78
mutagenesis in, 232-34
nitrogen assimilation in, 245-47
nitrogen fixation in, 234-42
regulation of, 242-45
oxygen tolerance in, 247-49
Azotobacter chroococcum
sterols in, 302
Azotobacter vinelandii
MoFe protein from, 338
nitrogenase system in, 719
Aztreonam
minimal inhibitory concentration of, 580

B

Bacillomycin, 266
Bacillus
endogenous metabolism of, 33
Bacillus acidocaldarius
hopanoids in, 305
Bacillus cereus
cephalosporinase of, 575
starving
protein degradation and synthesis in, 34
Bacillus megaterium
cecropia lysozyme and, 107
melittin and, 110
Bacillus polymyxa
polymyxin and, 266
Bacillus subtilis
growth of
kinetics of, 4
melittin and, 110
Bacillus thuringiensis
insect control and, 104
insect infection and, 109-10
phage-resistant mutants of *Hyalophora cecropia* immunity and, 118
Bacitracin, 264, 276
genes for
chromosomal location of, 280
Bacitracin synthetase, 269
Bacteria
ammonia assimilation in, 246-47
in cockroach gut, 619-31
growth of
carbon dioxide and, 2-3
nutrient concentration and, 2
heterotrophic
growth and nongrowth of, 25-43
insect pathogenic, 104
lignin biodegradation and, 469-70
photosynthetic
genetics of, 703-22
protein export in
site of, 421-22
starvation survival of, 26-32
mechanisms of, 32-43
See also Marine bacteria
Bacterial biofilms, 435-59
antimicrobial agents and, 452-55
distribution of, 440-52
physiology of, 438-40
structure and dynamics of, 437-38
Bacterial biomass
marine
predation and, 27
Bactericidin, 108
Bacteriohopaneaminotriol, 306, 318
Bacteriohopane derivatives, 305-6
Bacteriohopanetetrol, 306, 318
Bacteroides
IncP plasmids and, 78
Bacteroides succinogenes, 445
Basidiobolus
identification of, 218-19
Basidiomycetes
lignin biodegradation and, 471
Beauveria bassiana
beauvericin and, 266
Beauvericin, 264, 266
Beetles
immune responses in, 106
Bee venom
cockroach immunity to, 113
melittin from, 110
Berninamycin, 271
Biodegradation
of ethoxylates, 6-7
Biohopanoids, 305
composite, 306-7
Bjerkandera adusta
ligninase activity in, 475
Blastomyces dermatitidis
identification of, 210-12, 215-16
Blastomycosis, 215
Bleomycine, 271
Bombyx mori
cecropin of, 107
lectin of, 116
prophenoloxidase of, 114
Bordetella
IncP plasmids of, 78
Bordetella pertussis
tracheal epithelium and, 293-94
Bouvardin, 275
Brevibacterium
endogenous metabolism of, 33
Brevibacterium linens
starving
DNA synthesis and degradation in, 33-34
Brome mosaic virus
recombination in, 414
Brown fat
poliomyelitis virus replication and, 155
Butyrivibrio fibrisolvens, 446

C

Cadmium
bacterial starvation survival and, 40
Campylobacter
hemorrhagic colitis and, 386
Campylobacter fetus
oviduct organ cultures and, 294
Campylobacter jejuni, 448
Capreomycin, 271
Capsduction
photosynthetic bacteria and, 705
Carbapenems, 574
Carbenicillin
minimal inhibitory concentration of, 580
Carbohydrate metabolism
trypanosomal, 127-47
Carbon
β-lactam synthesis and, 64-65
Carbon cycle, 13-17
Carbon dioxide
bacterial growth and, 2-3
4-Carboxy-4-hydroxy-2-ketoadipate, 16

Carotenoids, 325
cyclic, 325-26
prokaryotic, 311
Catabolism
aerobic, 15-16
aromatic, 13-17
hexaric acid, 13
Catalase
trypanosomal glycosomes and, 132, 146
Catechols
meta-fission pathways for, 12, 15
Caulobacter
IncP plasmids of, 78
Cecropin D
Escherichia coli and, 118
Cecropins, 107-12
precursors of, 111-12
synthesis of, 110-11
Cefazolin
hydrolysis of, 576
Cefoperazone
minimal inhibitory concentration of, 580
Cefotaxime
minimal inhibitory concentration of, 580
Cefoxitin
R & S I β-lactamases and, 578
Ceftazidime
minimal inhibitory concentration of, 580
Ceftizoxime
minimal inhibitory concentration of, 580
Celeneamides, 271
Cell-free immunity
insects and, 103-221
Cellular immunity, 105
leprosy and, 657-68
Cellulose
cockroach and, 631-32
Cephaloridine
hydrolysis of, 576
Cephalosporinases
chromosomal
characteristics of, 575-77
expression of, 577-81
genetics of, 581-83
Cephalosporin C
biosynthesis of, 52
sulfate reduction pathway and, 64
Cephalosporins
minimal inhibitory concentration of, 580
Cephalosporium acremonium
cystathionine-γ-lyase of, 61
isopenicillin N epimerase of, 56
isopenicillin N synthetase of, 54
β-lactam antibiotics of
aminoadipic acid and, 58
methionine and, 61
β-lactam biosynthesis and, 54-57
Cephamycin C
biosynthesis of, 62-63
Cephamycins
biosynthesis of, 52
glucose control of, 65
R & S I β-lactamases and, 578
Chaetomium piluliferum
lignin biodegradation and, 470
Chagas' disease, 128
Chemical pollutants, 17-20
Chemolithotrophs
dihydrogen oxidation and, 339-41
Chitin
cockroach and, 635-36
Chlamydia trachomatis
oviduct organ cultures and, 295
Chloramphenicol, 8
Chlorate
Azotobacter mutants resistant to, 233
Chlorobium limicola
ATP citrate lyase in, 8
Chloroquine
Plasmodium falciparum and, 690
Cholera, 682 680, 679
Cholesterol
phylogenetic derivation of, 322-28
Chromobacterium violaceum
IncP plasmids of, 78
Chromoblastomycosis, 218
Chromosomal cephalosporinases
characteristics of, 575-77
expression of, 577-81
genetics of, 581-83
Chromosome mobilization
IncP plasmids and, 92-93
Circumsporozoite proteins
malaria and, 183-86
Cirratiomycins, 271
Citrate
Azotobacter mutants resistant to, 233
metabolism of
Escherichia coli and, 10
Krebs cycle and, 9
Citrate lyase, 8-10
Citrate oxaloacetate-lyase, 8
Citrobacter
in cockroach gut, 621
Citrobacter freundii
cephalosporinase of, 575
Cladosporium bantianum
antigens of, 212
identification of, 220
Cladosporium carrionii
antigens of, 212
identification of, 220
Clavulanic acid
cephalosporinases and, 575
Cloning vectors
IncP plasmids and, 93-94
Clostridium difficile, 448
Clostridium sphenoides
citrate lyase in, 8
Cloxacillin
cephalosporinases and, 575
Staphylococcus aureus and, 454
Coagulocytes, 105
Coccidioides immitis
identification of, 210-12, 216-17
Coccidioidomycosis, 216
Cockroach
bee and snake venom and, 113
Cockroach gut
bacteria in, 619-31
biochemical activities in, 631-36
microbial ecology of, 617-38
Coenzyme A, 6, 8
acetyl, 3
Colitis
See Hemorrhagic colitis
Cometabolism, 18
Conidiobolus
identification of, 218-19
Copiotrophs, 28, 33
Coprophagy
cockroach and, 636
Coriolus versicolor
ligninase activity in, 475
veratryl alcohol synthesis by, 474
Coronaviruses
recombination in, 414
Corynebacterium
lignin biodegradation and, 470
Crayfish
prophenoloxidase activation in, 115
Cricket
lectins of, 115
Crithidia, 128
catalase in, 146
glycosomes of
phosphoenolpyruvate carboxykinase in, 137
microbodies of
catalase in, 132

Crithidia acanthocephali
minicircle DNA of, 365
Crithidia fasciculata
glycerol 3-phosphate shuttle in, 137
minicircle DNA of, 365
Crithidia luciliae
maxicircle DNA of, 374-75
minicircle DNA of, 365
Crithidia oncopelti
maxicircle DNA of, 374-75
Cryoechinulin, 271
Cyanobacteria
hopanoids in, 305
Cyathus stercoreus
lignin biodegradation and, 471
Cyclic AMP
stringent response and, 39-40
Cycloartenol, 326
Cyclosporin, 264
Cystathionine
cephamycin C biosynthesis and, 62-63
β-lactam synthesis and, 63-64
thienamycin biosynthesis and, 62-63
Cystathionine-γ-lyase
β-lactam antibiotics and, 62-63
Cysteine
cephamycin C biosynthesis and, 62-63
β-lactam antibiotics and, 52, 58
thienamycin biosynthesis and, 62-63
Cystic fibrosis
Pseudomonas aeruginosa and, 455
Cytomegalovirus
herpes simplex virus multiplication and, 561
Cytoplasmid antigens
malaria and, 196

D

Darkling beetles
cecropinlike molecules in, 107
Deacetoxycephalosporin C synthetase, 56
Deacetylcephalosporin C, 52, 66
Dehydroamino acids
peptide antibiotics and, 271-72
Dermatophytes
identification of, 219
Desferrithiocin
biosynthesis of, 63
Destruxin, 264
Desulfovibrio gigas
hydrogenase from, 348
Diabetes
juvenile-onset
RNA viruses and, 421
Diapophytoene, 310
Diarrhea
Shiga toxin and, 395-96
Dihydric phenols, 15-16
Dihydrogen
nitrogen fixation and, 336-38
Dihydrogen oxidation
chemolithotrophic growth and, 339-41
Dioxygen
enzymology of, 15
Diphtheria, 682
Diploptene, 305
Diplopterol, 303
Diptericins, 113
Disease prevalence
models of, 681-84
DNA
kinetoplast maxicircle
divergent region of, 374-75
transcription of, 375-77
kinetoplast minicircle, 365-71
conformational bend in, 370-71
replication of, 371
sequence heterogeneity of, 368-69
sequence organization in, 365-68
DNA synthesis
starving bacteria and, 40
Dolichols, 307
Drosophila
cecropinlike molecules in, 107
Drosophila melanogaster
heat-shock protein of, 196

E

Edeine, 264
Enniatin, 264-66
Enteric bacteria
proton-motive force and, 35-36
Enterobacter cloacae
cephalosporinase of, 575
chromosomal cephalosporinases and, 574
Enterobacteriaceae
IncP plasmids of, 78
inducible R & S I β-lactamases in, 581-83
Enterococcus faecalis
insect infection and, 109
Epibacteria, 28
Epidermin, 261
Epstein-Barr virus
genome of, 556
herpes simplex virus multiplication and, 561
Erythrocyte surface antigens
malaria and, 183, 190-93
Escherichia coli
ampC in, 581
attacins and, 112-13
carbon starvation of, 39
cecropin D and, 109
cephalosporinase of, 575
citrate metabolism by, 10
endogenous metabolism of, 33
export of protein from, 507-35
growth of
kinetics of, 4
hemorrhagic colitis and, 383-402
melittin and, 110
outer membrane of
diffusion resistance of, 42
phage-resistant mutants of cecropin D and, 118
ribosomelike particles in, 8
starvation survival of, 32
starving
DNA synthesis and degradation in, 33-34
protein degradation and synthesis in, 34-35
See also IncP plasmids
Escherichia coli D22
cecropia lysozyme and, 107
Escherichia coli O157:H7
biochemical features of, 393
growth and survival of, 393
pathogenesis of, 393-401
Ethoxylates
biodegradation of, 6-7
Eublaberus posticus
gut bacteria of, 619-31
Eukaryotes
ATP citrate lyase in, 8
citrate synthase in, 8
hopanoids in, 303-5
β-lactam production in regulation of, 64-65
tetrahymanol in, 303-5
Eumycotic mycetoma, 220
Exoantigens
fungal identification and, 209-23
Exoantigen tests, 209-1
Exophiala jeanselmei
antigens of, 212
identification of, 221

F

Fallopian tubes
organ cultures of, 294-97

Fatty acids
Acinetobacter oxidation of, 11
bacterial endogenous metabolism and, 33
Flavobacterium meningosepticum
oxyiminocephalosporinases of, 576
Flavobacterium odoratum
oxyiminocephalosporinases of, 576
Flavoproteins, 15
Flies
immune responses in, 106
3-Fluoro-3-deoxycitrate, 10
Fomes lignosus
ligninase activity in, 475-76
Fonsecaea pedrosoi
identification of, 220
Fructose
trypanosomal glycolysis and, 129
Fungal identification
exoantigens and, 209-23
Fungal pathogens
identification of, 214-21
Fungi
lignin biodegradation and, 470-71
Fusarium oxysporum
enniatin and, 265-66

G

β-Galactosidase
sugar metabolism and, 4
Galleria mellonella
Streptococcus faecium and, 119
Gametocyte antigens
malaria and, 183
Gentisic acid, 16
Geohopanoids, 305
Giardia lamblia
epidemiology of, 678
Glucose
cephamycin biosynthesis and, 65
Escherichia coli citrate metabolism and, 10
β-lactam synthesis and, 64-65
trypanosomal glycolysis and, 129
Glutamate dehydrogenase
bacterial ammonia assimilation and, 246-47
Glutamine synthetase
β-lactam biosynthesis and, 65
Glycerol
trypanosomal glycolysis and, 129
Glycerol 3-phosphate oxidase
salicyl hydroxamic acid and, 135
Glycolysis
trypanosomal, 129-30
compartmentation of, 133-37
regulation of, 140-41
Glycolytic enzymes
trypanosomal
genes coding for, 143
synthesis of, 143-44
Glycolytic polypeptides
trypanosomal
properties of, 144-45
Glycosomal enzymes
trypanosomal, 141
Glycosomes
trypanosomal, 130-33
biogenesis of, 141-45
enzymes and pathways of, 137-40
microbodies and, 145-46
Glyoxylate carboligase, 11-12
Gonorrhea, 696
Gramicidin, 264, 273
Gramicidin S, 264, 276
genes for
chromosomal location of, 280
Gramicidin S synthetase, 264-65
Granulocytes, 105
Grasshoppers
lectins of, 115
Gratisin, 266
Greater wax moth
Streptococcus faecium and, 119
Gross restriction map
IncP plasmids and, 78-80
Gryllus bimaculatus
lysozymes of, 106

H

Haemophilus influenzae
nasopharyngeal colonization by, 293
penicillin-binding proteins and, 574
Halobacterium
dehydrosqualene in, 310
Hansen's disease
See Leprosy
Hemocytes
classification scheme for, 105
Hemolytic-uremic syndrome
hemorrhagic colitis and, 390-91
Hemorrhagic colitis, 383-402
clinical manifestations of, 388-92
epidemiology of, 384-88
microbiology of, 393-401
Hepatitis A virus
epidemiology of, 678
Herpes simplex viruses, 543-65
gene expression and, 547-48
gene functions and expression, 545-47
genome of, 548-49
latency and, 550-64
Herpesviridae, 545
Heteroduplex analysis
IncP plasmids and, 78-79, 89
Heterotrophic bacteria
growth and nongrowth of, 25-43
Hexaric acids
catabolism of, 13
Histoplasma capsulatum
identification of, 210-12, 217
Histoplasmosis, 217
Homogentisic acid, 16
Homoprotocatechuate
meta-fission pathway for, 16
Hopanoids, 303-7
anaerobic cyclization of, 325-26
biosynthesis of, 318-20
eukaryotic, 303-5
prokaryotic, 305-7
ring methylation of, 320
House fly
prophenoloxidase of, 115
Hyalophora cecropia
immunity to infection in, 106
Hyalophora cecropia immunity
Bacillus thuringiensis and, 118
Hydrogen uptake
Azotobacter and, 249-50
4-Hydroxy-2-ketopimelate, 16
α-Hydroxymuconate
semialdehydes of, 11
α-Hydroxymuconate semialdehyde
carboxy derivative of, 12
Hypomicrobium X
IncP plasmids of, 78
Hypoxanthine guanine phosphoribosyl transferase
trypanosomal glycosomes and, 132
Hypoxylon
lignin biodegradation and, 471

I

Imipenem
minimal inhibitory concentration of, 580
R & S Ic β-lactamases and, 576
R & S I β-lactamases and, 578

Immune protein P4, 113
Immune proteins
  induction in insects, 117-18
Immune recognition
  mammalian
    protozoa and, 118
Immunity
  See Cell-free immunity; Cellular immunity
Immunization
  influenza, 298
  See also Vaccination
IncP plasmids, 77-94
  auxiliary inheritance functions of, 86
  chromosome mobilization and, 92-93
  cloning vectors and, 93-94
  conjugal transfer functions of, 87-88
  genetic manipulation and, 92-94
  molecular analysis of, 78-88
  replication functions of, 81-86
  subgroups of, 89-92
  transposon mutagenesis and, 93
Infections
  insect
    antibacterial factors inducible by, 105-13
Infectious disease
  mathematical models of, 677-98
    algorithmic construction of, 684-89
    heterogeneity and, 696-98
  transmission potential of, 690-93
  vector-borne, 689-90
Influenza
  cyclic variation of, 694
  immunization against, 298
Influenza A virus
  genome heterogeneity in, 416-17
  instability of, 410
  Tc cells and, 421
Influenza viruses
  host immune selection and, 419
Insect hemolymph
  immunity-related factors in, 114-16
Insect immunity
  function of, 119
  resistance to, 118-19
Insects
  attacins of, 112-13
  cecropins of, 107-12
  cell-free immunity in, 103-21
  diptericins of, 113
  immune protein induction in, 117-18
  immunization of, 104
  infections in
    antibacterial factors inducible by, 105-13
  injury reaction of, 116-17
  lysozymes of, 106-7
  vertebrates compared with, 120-21
Interferon
  Mycobacterium leprae and, 663
  RNA viral infection and, 420
Interleukins
  Mycobacterium leprae and, 662-63
Interposon mapping
  photosynthetic bacteria and, 708-10
Interposon mutagenesis
  photosynthetic bacteria and, 708
Isoarborinol, 326
Isocitrate lyase, 12
Isopenicillin N
  biosynthesis of, 52, 56
Isopenicillin N epimerase, 56
Isopenicillin N synthetase
  β-lactam biosynthesis and, 54
Iturin, 266

K

Kanamycin
  Azotobacter mutants resistant to, 233
α-Ketoglutarate
  semialdehydes of, 11
  synthesis of
    acetate and, 11
Kinetoplastid protozoa, 363-77
Klebsiella
  in cockroach gut, 621
Klebsiella aerogenes
  citrate lyase in, 8-9
Klebsiella oxytoca
  oxyiminocephalosporinases of, 576
Klebsiella pneumoniae
  nif genes in, 235-38
  reduced ferredoxin in, 336
Krebs cycle, 3, 7-8
  anaplerotic sequence and, 10-11
  citrate metabolism and, 9
K-strategists, 28

L

Laccase
  lignin biodegradation and, 483-84
β-Lactam antibiotics, 51-70
  biosynthesis of
    mechanisms controlling, 58-64
  precursors of, 52
  resistance to, 573-88
    mechanisms for, 583-87
β-Lactam-specific enzymes
  characterization of, 54-58
Lactate dehydrogenase
  trypanosomal glycolysis and, 129
Laminarin
  prophenoloxidase activation and, 115
Langmuir isotherm, 5
Lanosterol, 326
Lavendomycin, 271
Lectins
  insect immunity and, 115-16
Legionella pneumophila
  IncP plasmids of, 78
Leishmania, 128
  differentiation of, 369
Leishmania mexicana
  glycosomes of
    purine salvage pathway of, 139
Leishmania promastigotes
  glycosomes of
    adenylate kinase in, 139
    phosphoenolpyruvate carboxykinase in, 137
Leishmaniasis, 128, 369
  Leishmania tarentolae
  maxicircle genomes of, 373-74
  minicircle DNA of, 365
Leishmania tropica
  glycosomes of, 130
Lentinula edodes
  lignin biodegradation and, 472
Lepidopteran, 108
Leprosy, 645-69
  cellular immunity in, 657-68
  serodiagnosis of, 649-50
Leptomonas gymnodactyli
  maxicircle DNA of, 374-75
Leptomonas pessoai
  maxicircle DNA of, 374-75
Leptomonas samueli
  catalase in, 146
Leupeptin, 273
Libertella
  lignin biodegradation and, 471
Lignin
  aromatic acid formation and, 14
  biodegradation of, 465-93
    microbiology of, 468-71
    white-rot fungi and, 471-91

Ligninase
lignin biodegradation and, 475-83
Lipid bilayers
Escherichia coli
export of protein and, 516-17
Lipoarabinomannan
Mycobacterium leprae and, 651-53
Lipomannan
Mycobacterium leprae and, 651-53
Locusta
lysozymes of, 106
2,4-Lutidinic acid, 12
Lysozymes
insect, 106-7

M

Macromomycin, 260
Malaria, 689-92
control of
mathematical models for, 679
host immune system and, 181-83
vaccine for, 200-1
Malate dehydrogenase
trypanosomal glycosomes and, 132
Malate synthase, 12
Mammals
immune recognition in protozoa and, 118
Manduca sexta
immunity to infection in, 106
Manganese peroxidase
lignin biodegradation and, 483
Mannose
trypanosomal glycolysis and, 129
Marine bacteria
growth and nongrowth of
surface attachment and, 28-29
transient phase between, 30-32
intermittent growth of, 27-30
life cycle of, 29-30
nutritional diversity of, 27-28
starvation survival of, 30-32
mechanisms of, 36-43
surface characteristics and adhesion and, 31-32
Measles, 681-82, 697
cyclic variation of, 693
epidemiology of, 678
population size and, 694-95
Measles virus
Paget's disease and, 420
subacute sclerosing panencephalitis and, 420
Medical biomaterials, 443-45
Melanoplus sanguinipes
lectin of, 115
Melittin
antibacterial activity of, 110
Meningitis, 682
Merozoite surface antigens
malaria and, 182, 189-90
Metabolism, 3
carbohydrate
trypanosomal, 127-47
citrate
Escherichia coli and, 10
Krebs cycle and, 9
phosphate
NMR studies of, 611-12
purine
trypanosomal, 139
pyrimidine
trypanosomal, 139
sugar
β-galactosidase and, 4
yeast spore, 605-7
Methane
cockroach and, 634-35
Methanospirillum
endogenous metabolism of, 33
Methanospirillum hungatii
starving
DNA synthesis and degradation in, 33-34
Methionine
cephamycin C biosynthesis and, 62-63
β-lactam biosynthesis and, 61
thienamycin biosynthesis and, 62-63
Methionine-sulfoximine
Azotobacter mutants resistant to, 233
Methylalanine
Azotobacter mutants resistant to, 233
Methylammonium
Azotobacter mutants resistant to, 233
Methylobacterium organophilum
bacteriohopanetetrol in, 318
IncP plasmids of, 78
Methylococcus
IncP plasmids of, 78
Methylococcus capsulatus
hopanoids in, 305
squalene cyclization in, 319
sterols in, 303
Methylophillus methylotrophus
IncP plasmids of, 78
Methylosinus trichosporium
IncP plasmids of, 78
Mezlocillin
minimal inhibitory concentration of, 580
Michaelis-Menten equation, 5
Microbodies
trypanosomal glycosomes and, 145-46
Micrococcus luteus
cecropia lysozyme and, 107
cecropins and, 111
Monobactams, 574
Monoclonal antibodies
fungal identification and, 221-22
Monod equation, 5
Monooxygenases
aromatic, 15
Moxalactam
minimal inhibitory concentration of, 580
R & S Ic β-lactamases and, 576
Multiple sclerosis
RNA viruses and, 421
Murein biosynthesis
D-Ala-D-Ala formation in, 270
Musca domestica
prophenoloxidase of, 115
Mycelinamide, 271
Mycetoma
eumycotic, 220
Mycobacterium leprae
envelope of, 647-54
protein antigens of, 654-57
Mycobacterium tuberculosis
epidemiology of, 678
Mycobacterium leprae and, 652-53
Mycoplasma pneumoniae
pathogenicity of
organ cultures and, 294
Mycosubtilin, 266
Myxococcus xanthus
IncP plasmids of, 78
Myxomatosis, 695

N

Nalidixic acid
Azotobacter mutants resistant to, 232
bacterial starvation survival and, 40
Nannocystis exedens
sterols in, 303
Nasopharynx
organ cultures of, 292-93
Neisseria
IncP plasmids of, 78
Neisseria gonorrhoeae

nasopharyngeal mucosa and, 293
oviduct organ cultures and, 295
penicillin-binding proteins and, 574
Neocarzinostatin, 260
Nisin, 261, 271
Nitrate reductase
Azotobacter and, 247
Nitrite reductase
Azotobacter and, 247
Nitrogen
β-lactam synthesis and, 64-65
Nitrogen fixation
cockroach and, 636
dihydrogen evolution during, 336-39
photosynthetic bacteria and, 718-22
Nocardia
endogenous metabolism of, 33
lignin biodegradation and, 470
Nonylphenol ethoxylates
biodegradation of, 6-7
Norleucine
β-lactam biosynthesis and, 61
Nosiheptide, 271
Nuclear magnetic resonance
cell viability and, 597-98
yeast and, 595-613

O

Oenocytoids, 105
Oligotrophs, 28
Organ cultures, 291-99
immunologic studies and, 298-99
nasopharyngeal, 292-93
oviduct, 294-97
skin, 299
tracheal, 293-94
Organ transplantation
in insects, 116
Orotate phosphoribosyl transferase
trypanosomal glycosomes and, 132
Orotidine carboxylase
trypanosomal glycosomes and, 132
Oviducts
organ cultures of, 294-97
Oxygen
citrate lyase synthesis and, 9
Oxygen tolerance
Azotobacter and, 247-49
Oxyiminocephalosporins, 575-76

P

Paget's disease
RNA viruses and, 420
Panus tigrinus
ligninase activity in, 475
Papilloma virus
genome of, 556
Parachloromercuribenzoate
cephalosporinases and, 575
Paracoccidioides brasiliensis
identification of, 210-12, 217-18
Paracoccus denitrificans
IncP plasmids of, 78
Parainfluenza virus type 3
Paget's disease and, 420
Paramyxoviruses
Paget's disease and, 420
Penams, 574
Penems, 574
minimal inhibitory concentration of, 580
Penicillin N, 65-67
Penicillins
biosynthesis of, 52
minimal inhibitory concentration of, 580
Penicillium chrysogenum
LLD-ACV biosynthesis in, 54
cystathionine-γ-lyase of, 61
isopenicillin N synthetase of, 54
β-lactam antibiotics of aminoadipic acid and, 58
Penicillium marneffei
identification of, 219-20
Pep-5, 261
Peptide antibiotics
biosynthesis of, 259-80
regulation of, 276-77
modification reactions and, 270-75
peptide chain derivation and, 260-70
Pseudomonas aeruginosa and, 453
Peptides
enzymatic formation of, 263-64
Peptococcus
endogenous metabolism of, 33
Peptococcus prevotii
endogenous metabolism of, 33
Periplaneta americana
bee and snake venom and, 113
gut bacteria of, 619-31
Pertussis, 682, 697
cyclic variation of, 693

pH
endogenous metabolism in starved cells and, 36
Phaeohyphomycosis, 218
Phage Qβ, 410, 416-17
instability of, 410
Phagocytosis
cells involved in, 105
Phanerochaete chrysosporium
genetic mutants of, 487-88
lignin biodegradation and, 472
Phenolic glycolipids
Mycobacterium leprae and, 647-51
Phenols
dihydric, 15-16
Phialophora verrucosa
antigens of, 212
identification of, 220-21
Phlebia radiata
ligninase activity in, 475
veratryl alcohol synthesis by, 474
Phleomycine, 271
Phormia terranovae
antibacterial proteins of, 113
Phosphate metabolism
NMR studies of, 611-12
Phosphoenolpyruvate carboxykinase
trypanosomal glycosomes and, 132, 137
Phosphoglycerate kinase
glycosomal, 144-45
Phospholipid bilayers
sterols and, 312
Phosphomannose isomerase
trypanosomal glycosomes and, 132
Phosphopantothenate, 9
Photosynthetic bacteria
genetics of, 703-22
Phytanyl ethers, 324-25
Phytomonas davidi
minicircle DNA of, 365
Picornaviruses
recombination in, 413-14
Piperacillin
minimal inhibitory concentration of, 580
Piperazinomycin, 275
Planktobacteria, 28
Plasmatocytes, 105
Plasmids
See IncP plasmids
Plasmodium
circumsporozoite protein precursor of, 184
Plasmodium cynomolgi
circumsporozoite proteins of, 185

Plasmodium falciparum, 181-82
antigenic variation in, 196-97
circumsporozoite proteins of, 185-86
drug resistance of, 690
merozoite surface antigens of, 189
repetitive polypeptides of, 197-98
rhoptry antigen of, 193
S-antigens of, 186-89
Plasmodium knowlesi
antigenic variation in, 197
circumsporozoite proteins of, 185-86
Plasmodium lophurae
histidine-rich protein of, 193-94
Plasmodium malariae, 181
Plasmodium ovale, 181
Plasmodium vivax, 181
circumsporozoite proteins of, 185
Plasmodium yoelii
circumsporozoite proteins of, 185
Pleurotus ostreatus
ligninase activity in, 475
Poliomyelitis, 154-56, 682
epidemiological pattern of, 153-54
Polioviruses
attenuation of, 159-63
genetic basis of, 163-74
genome stability in, 419
recombination in, 413-14
replication of, 157-58
Sabin vaccine strains of, 160-63
structure of, 156-57
WHO neurovirulence test and, 159-60
Poliovirus type 1, 163-69
Poliovirus type 2, 172-74
Poliovirus type 3, 169-72
Pollutants
chemical, 17-20
Poly-β-hydroxybutyrate
marine bacteria and, 37
Polymyxin, 264, 266
Polyols, 305-6
Polypeptides
enzymatic formation of, 263-64
Polyprenols, 307, 317-20
Polyterpenoids
prokaryotic, 307-11
biosynthesis of, 317-20
membrane reinforcement and, 312-17
Predation
bacterial biomass in marine waters and, 27
Prohemocytes, 105
Prokaryotes
absence of sterols in, 302-3
carotenoids in, 311
citrate oxaloacetate-lyase in, 8
citrate synthase in, 8
hopanoids in, 305-7
β-lactam production in regulation of, 64-65
polyterpenoids in, 307-11
biosynthesis of, 317-20
membrane reinforcement and, 312-17
Propargyl-glycine
cephamycin C synthesis and, 62
Prophenoloxidase-activating enzyme, 114
Prophenoloxidases
insect immunity and, 114-15
Protein antigens
Mycobacterium leprae and, 654-57
Protein export, 507-35
Proteins
bacterial endogenous metabolism and, 33
immune
induction in insects, 117-18
Protein turnover
starving bacteria and, 34-35, 38-39
Proteus vulgaris
R & S Ic β-lactamase of, 575
Protocatechuate, 12
meta-fission pathway for, 16
Protocatechuate 3,4-dioxygenase, 15
Protocatechuate 4,5-dioxygenase, 15
Proton-motive force
enteric bacteria and, 35-36
Protozoa
kinetoplastid, 363-77
mammalian immune recognition and, 118
Pseudallescheria boydii
identification of, 220
Pseudomonas
endogenous metabolism of, 33
IncP-1 plasmids of, 77
IncP plasmids of, 78
lignin biodegradation and, 470
starvation survival of, 30
surface characteristics and adhesion and, 31
starving
ATP levels in, 37-38
Pseudomonas aeruginosa
antibiotics binding to, 453
cephalosporinase of, 575
chromosomal cephalosporinases and, 574
cystic fibrosis and, 455
IncP plasmid replication in, 83-84
IncP plasmids and, 78
IncP plasmid transfer from, 87
insect infection and, 109
starving
DNA synthesis and degradation in, 33-34
Pseudomonas cepacia
oxyiminocephalosporinases of, 576
Pseudomonas maltophilia
IncP plasmid transfer to, 87
oxyiminocephalosporinases of, 576
Pseudomonas putida
IncP plasmid replication in, 83-84
Pseudomonas stutzeri
IncP plasmid replication in, 83
IncP plasmid transfer from, 87
Purine metabolism
trypanosomal, 139
Pycnoporus cinnabarinus
veratryl alcohol synthesis by, 474
Pyrimethamine
Plasmodium falciparum and, 690
Pyrimidine biosynthetic pathway
trypanosomal glycosomes and, 132
Pyrimidine metabolism
typanosomal, 139

Q

Quinones, 310

R

Rabies, 159, 681
Reed-Frost model, 684-89
Relaxosome, 87
Reoviruses
instability of, 410
Respiratory syncytial virus
Paget's disease and, 420
Retroviruses
recombination in, 412-13
Rheumatoid arthritis
RNA viruses and, 421

Rhizobium
IncP plasmids of, 78
nif genes in, 241-42
Rhizobium hydrogenase, 335-56
biochemistry of, 343-50
consequences of, 341-43
genetics of, 350-54
Rhizobium leguminosarum
Hup determinants in, 352-53
Rhodobacter capsulatus, 704
Rhodobacter sphaeroides, 704
Rhodomicrobium vannielii
bacteriohopaneaminotriol in, 306
Rhodopseudomonas
IncP plasmids of, 78
Rhodopseudomonas gelatinosa
phototropic growth of, 8-9
Rhodopseudomonas palustris
bacteriohopaneaminotriol in, 306, 318
Rhodospirillum
IncP plasmids of, 78
Rhoptry antigens
malaria and, 182, 193
Ribosomes, 8
bacterial endogenous metabolism and, 33
Rifampicin
Azotobacter mutants resistant to, 232, 234
Rifampin
Staphylococcus aureus and, 454
RIT 2214, 67
RNA
bacterial endogenous metabolism and, 33
RNA genomes
heterogeneity of, 414-17
RNA synthesis
immunity and, 106
starving bacteria and, 39
RNA viruses
evolution of, 409-26
rates of, 410-11
genetic information in
recombination of, 412-14
genome plasticity of
biological implications of, 421-25
mutation of
rates of, 417-21
Rous sarcoma virus
mutation frequency of, 416
R-strategists, 28
Rubella, 697
cyclic variation of, 693
Ruminococcus albus, 445
Ruminococcus flavefaciens, 445

S

Sabin vaccine, 160-63
Saccharomyces cerevisiae
NMR studies of, 595-613
Salicyl hydroxamic acid
glycerol 3-phosphate oxidase and, 135
Salmonella typhimurium
carbon starvation of, 39
endogenous metabolism of, 33
IncP plasmid transfer to, 87
starving
DNA synthesis and degradation in, 33-34
protein degradation and synthesis in, 34-35
Samia cynthia
immunity to infection in, 106
Saprophytes
identification of, 220
Sarcia
endogenous metabolism of, 33
Sarcophaga peregrina
cecropin of, 107
lectin of, 115
Sarcotoxin, 108
Schistosomiasis, 692
control of
mathematical models for, 679
Schonlein-Henoch purpura, 392
Selenomonas
endogenous metabolism of, 33
Selenomonas ruminantium
starving
enzyme activity in, 35
Serratia marcescens
insect immunity and, 118
insect infection and, 109
Shiga toxin
diarrhea and, 395-96
Silkworm
cecropin of, 107
lectin of, 116
prophenoloxidase of, 114
Silkworm moth
immunity to infection in, 106
Simian virus 5
Paget's disease and, 420
Siomycin, 271
Sleeping sickness, 128
Snake venom
cockroach immunity to, 113
Spherulocytes, 105
Spodoptera eridania
lysozymes of, 106
Sporothrix schenckii
identification of, 218
Sporozoite antigens, 183-86
Squalene, 307-10
cyclization of, 319-20
Squalenoids, 325
Staphylococcus
endogenous metabolism of, 33
squalene in, 310
Staphylococcus aureus
rifampin and, 454
Starvation survival
bacterial, 26-27
mechanisms of, 32-43
Stendomycin, 271
Sterols
absence in prokaryotes, 302-3
phospholipid bilayers and, 312
Streptococcus
squalene in, 310
Streptococcus diacetilactis
citrate lyase in, 8
Streptomyces
isopenicillin N epimerase of, 56
Streptomyces antibioticus strain DSM
desferrithiocin and, 63
Streptomyces cattleya
cystathionine-γ-lyase activity in, 62
Streptomyces clavuligerus
isopenicillin N epimerase of, 56
isopenicillin N synthetase of, 54
Streptomyces lactamdurans
cephamycin biosynthesis in
glucose control of, 65
isopenicillin N epimerase of, 56
isopenicillin N synthetase of, 54
reverse transsulfuration in, 62
Streptomyces phaeochromogenes
cystathionine-γ-lyase of, 63
Streptomycetes
squalene in, 310
Streptomycin
Azotobacter mutants resistant to, 232-33
Stringent response
cyclic AMP and, 39-40
induction of, 35
Subacute sclerosing panencephalitis
measles virus infection and, 420
Subtilin, 261, 271
Subtilosin A, 263
Succinate
semialdehydes of, 11

Sugars
metabolism of
β-galactosidase and, 4
Sulbactam
cephalosporinases and, 575
S-Sulfocysteine
β-lactam synthesis and, 63-64
Sulfur metabolism
β-lactam biosynthesis and, 59-62
Surfactin, 264

T

Tartronate semialdehyde synthase, 11-12
Teleogryllus commodus
lectin of, 115
Telomycin, 271
Tetanus, 682
Tetracycline resistance genes
IncP plasmids and, 81
Tetrahymanol
eukaryotic, 303-5
Tetrahymena pyriformis
diplopterol in, 303
squalene cyclization in, 319
tetrahymanol in, 313
Thermomicrobium roseum
isoprenoid ethers in, 310
Thienamycin
biosynthesis of, 62-63
Thiobacillus
IncP plasmids of, 78
Thiostrepton, 271
Thrombotic thrombocytopenic purpura
hemorrhagic colitis and, 390-91
Tobacco hornworm
immunity to infection in, 106
lectinlike protein of, 116
Tobacco mosaic virus
instability of, 410
Tobramycin
Pseudomonas aeruginosa and, 453
Trachea
organ cultures of, 293-94
Trametes cingulata
ligninase activity in, 475-76
Transposon mutagenesis
IncP plasmids and, 93-94
photosynthetic bacteria and, 707-8
Treponema bryantii, 446
Treponema hyodysenteriae
sterols in, 303
Trichoderma harzianum
lignin biodegradation and, 470
Trichomonas fetus
oviduct organ cultures and, 294
Trichosporon cutaneum
aromatic catabolism and, 16-17
Trichuris trichura, 696
Tricyclopolyprenols, 325-26
Trypanosoma
life cycle of
maxicircle transcription during, 376-77
Trypanosoma brucei
glycolysis in, 129-30
compartmentation of, 133-37
regulation of, 140-41
glycosomal enzymes of, 141
glycosomes of, 130-33
biogenesis of, 141-45
enzymes and pathways of, 137-40
microbodies and, 145-46
purine salvage pathway of, 139
life cycle of, 128-29
maxicircle genomes of, 373-74
minicircle DNA of, 365
Trypanosoma brucei brucei
tsetse fly hemolymph and, 114
Trypanosoma brucei trypomastigotes
glycosomes of
adenylate kinase in, 139
Trypanosoma cruzi
assassin bug and, 116
glycosomes of
purine salvage pathway of, 139
organelles of
peroxidase in, 132
Trypanosoma cruzi epimastigotes
glycosomes of
phosphoenolpyruvate carboxykinase in, 137
Trypanosoma equiperdum
minicircle DNA of, 365
Trypanosoma rhodesiense
glycosomes of
adenylate kinase in, 139
Trypanosomatidae
biology and life cycle of, 128-29
Trypanosoma vivax
minicircle DNA of, 365
Trypanosomes
carbohydrate metabolism in, 127-47
Tsetse flies
antitrypanosomal factor of, 114
cecropinlike molecules in, 107
Tyrocidine, 264, 276
genes for
chromosomal location of, 280

U

Ubiquinol-cytochrome *c* oxidoreductase
photosynthetic bacteria and, 717
Ubiquinones, 307
Uptake hydrogenase genes, 351-52
identification of, 353
Ureaplasma urealyticum
oviduct epithelium and, 294
Uric acid
cockroach and, 632-33

V

Vaccination
leprosy and, 646-47
malaria and, 200-1
poliomyelitis and, 153-54
Valine
β-lactam antibiotics and, 52, 58
Varicella
population size and, 694
Varicella zoster
herpes simplex virus multiplication and, 561
Veratryl alcohol
lignin degradation and, 474
Vertebrates
insects compared, 120-21
Vesicular stomatitis virus
cytotoxic T cells and, 421-22
instability of, 410
Vibrio ANT 300
starving, 37
chemotactic responses of, 42
RNA synthesis in, 39
substrate capture in, 41
Vibrio cholerae
IncP plasmids of, 78

starvation survival of, 30
surface characteristics and adhesion and, 31-32
Virginiamycin, 271
Virginiamycin M, 273

W

Wangiella dermatitidis
antigens of, 212
identification of, 221
White-rot fungi
lignin degradation by, 471-91
WHO neurovirulence test, 159-60

X

Xanthobacter autotrophicus
electron transport in, 343
Xanthomonas
IncP plasmids of, 78
lignin biodegradation and, 470
Xenorhabdus nematophilus
cecropins and, 118-19
insect infection and, 109
Xylaria
lignin biodegradation and, 471

Y

Yeast
NMR studies of, 595-613
Yeast spores
metabolism control in, 605-7

Z

Zymomonas
endogenous metabolism of, 33
Zymomonas mobilis
hopanoid content of, 316
IncP plasmids of, 78